

WHAT IS CLAIMED:

1. An intravascular stent for use in a body lumen, comprising:
  - a distal section, a proximal section, and a central section positioned between the distal section and the proximal section, each section being aligned along a common longitudinal axis forming the stent;
  - the distal section and the proximal section having a first strut pattern and a second strut pattern respectively, and the central section having a third strut pattern; and
  - wherein the first and the second strut patterns are more dense than the third strut pattern.
2. The stent of claim 1, wherein the third strut pattern includes straight struts.
3. The stent of claim 2, wherein the straight struts are connected at apices.
4. The stent of claim 3, wherein the straight struts connected by apices form a cylindrical surface and have a zig-zag configuration.
5. The stent of claim 2, wherein at least some of the straight struts have undulating members.
6. The stent of claim 5, wherein the undulating members provide more longitudinal flexibility to the stent than do the straight struts.

7. The stent of claim 1, wherein the third strut pattern includes undulating struts.

8. The stent of claim 7, wherein the undulating struts are connected by apices.

9. The stent of claim 8, wherein the undulating struts connected by apices form a cylindrical surface and have a zig-zag configuration.

10. The stent of claim 2, wherein the straight struts extend between the distal section and the proximal section.

11. The stent of claim 7, wherein the undulating struts extend between the distal section and the proximal section.

12. The stent of claim 1, wherein the distal section and the proximal section each have a plurality of cylindrical rings interconnected along the longitudinal axis.

13. The stent of claim 12, wherein the cylindrical rings are interconnected by links.

14. The stent of claim 13, wherein the links have a substantially straight configuration.

15. The stent of claim 13, wherein the links have an undulating configuration.

16. The stent of claim 13, wherein the links have a straight section and an undulating section.

17. The stent of claim 13, wherein the links have a straight section and a curved section.

18. An intravascular stent for use in a body lumen, comprising:

a distal section, a proximal section, and a central section positioned between the distal section and the proximal section, each section being aligned along a common longitudinal axis forming the stent;

5 the distal section and the proximal section each having a plurality of cylindrical rings interconnected along the longitudinal axis;

the central section having a plurality of struts connected by apices to form a zig-zag configuration around the circumference of the stent and forming the central section; and

10 the central section struts and apices form a connection between the distal section and the proximal section.

19. A method of implanting an intravascular stent for repairing a body lumen having vulnerable plaque, comprising:

a catheter having a proximal end and a distal end and an expandable member adjacent the distal end;

5 an intravascular stent, mounted on the expandable member, the stent having a distal section, a proximal section, and a central section positioned between the

distal section and the proximal section, the central section having a plurality of struts connected by apices to form a substantially zig-zag pattern around the circumference of the stent in the central section;

inserting the catheter into the vascular system and advancing the catheter

5 distal end so that the stent is positioned in a body lumen to be repaired;

aligning the stent in the body lumen so that the central section substantially aligns with the area of vulnerable plaque;

inflating the expandable member and implanting the stent in the body lumen; and

10 deflating the expandable member and withdrawing the catheter from the vascular system.

20. A flexible intravascular stent for use in a body lumen, comprising:

a distal section, a proximal section, and a central section positioned therebetween;

the distal section and the proximal section each having a plurality of

5 interconnected cylindrical rings, each cylindrical ring having a first delivery diameter and a second expanded diameter;

each cylindrical ring having a proximal end and a distal end and a cylindrical wall extending circumferentially between the proximal end and the distal end of the cylindrical ring;

10 at least one undulating link attaching each cylindrical ring to an adjacent cylindrical ring, the undulating links being positioned substantially within the cylindrical wall of the cylindrical ring; and

the central section having a plurality of struts connected by apices and extending around the circumference of the central section, the struts and apices

15 connecting the distal section to the proximal section.

21. The stent of claim 20, wherein the central section struts and apices have a zig-zag configuration.

22. The stent of claim 21, wherein the central section struts have a straight configuration.

23. The stent of claim 21, wherein the central section struts have a substantially curved configuration.

24. The stent of claim 21, wherein the central section struts have a substantially straight section and a substantially curved section.

25. The stent of claim 20, wherein at least one undulating link comprises at least one bend connected to a substantially straight portion, the substantially straight portion being substantially perpendicular to the stent longitudinal axis.

26. The stent of claim 25, wherein the substantially straight portion of the at least one undulating link is perpendicular to the stent longitudinal axis when the stent is in the first delivery diameter configuration.

27. The stent of claim 25, wherein the substantially straight portion of the at least one undulating link is perpendicular to the stent longitudinal axis when the stent is in the second expanded diameter configuration.

28. The stent of claim 20, wherein at least one of the undulating links comprise a plurality of bends.

29. The stent of claim 20, wherein each cylindrical ring comprises a plurality of peaks and valleys.

30. The stent of claim 29, wherein two peaks are positioned between each valley.

31. The stent of claim 29, wherein the peaks of each cylindrical ring are in phase with the peaks of an adjacent cylindrical ring.

32. The stent of claim 20, wherein the undulating links are configured to provide flexibility to the stent.

33. The stent of claim 20, wherein the cylindrical rings are configured to provide flexibility to the stent.

34. The stent of claim 20, wherein the stent is formed from a tube.

35. The stent of claim 20, wherein the stent is formed from a metal alloy.

36. The stent of claim 20, wherein the stent is formed from stainless steel.

37. The stent of claim 20, wherein the stent is formed from a shape memory alloy.

38. The stent of claim 37, wherein the stent is formed from the group of shape memory alloys consisting of nickel titanium and nickel/titanium/vanadium.

39. The stent of claim 20, wherein the stent is formed from a pseudoelastic metal alloy.

40. The stent of claim 39, wherein the stent is formed from the group of pseudoelastic metal alloys consisting of nickel titanium and nickel/titanium/vanadium.

41. The stent of claim 20, wherein at least a portion of the central section is provided with a cover.

42. The stent of claim 41, wherein the stent cover is formed of a polymer.

43. The stent of claim 42, wherein the polymer cover is taken from the group of polymers including PTFE and ePTFE.

44. The stent of claim 43, wherein the stent cover is attached to the struts of the central section by an adhesive.

45. The stent of claim 44, wherein the stent cover is attached to the struts of the central section by laser bonding.

46. The stent of claim 20, wherein at least a portion of the distal section rings are coated with a therapeutic drug to reduce cell growth distal to the vulnerable plaque.

47. The stent of claim 20, wherein at least a portion of the proximal section rings are coated with a therapeutic drug to reduce cell growth proximal to the vulnerable plaque.

48. The stent of claim 20, wherein at least a portion of the distal section rings and the proximal section rings are coated with a therapeutic drug to reduce cell growth on either side of the vulnerable plaque.

49. An intravascular stent for use in a body lumen, comprising:

a distal section, a proximal section, and a central section positioned between the distal section and the proximal section, each section being aligned along a common longitudinal axis forming the stent;

the distal section and the proximal section each having at least one cylindrical ring interconnected along the longitudinal axis, the number of cylindrical rings in the distal section differs from the number of rings in the proximal section;

the central section having a plurality of struts connected by apices to form a zig-zag configuration around the circumference of the stent and forming the central section; and

the central section struts and apices form a connection between the distal section and the proximal section.

50. The stent of claim 50, wherein the number of cylindrical rings in the distal section is greater than the number of cylindrical rings in the proximal section.

51. The stent of claim 50, wherein the number of cylindrical rings in the distal section is less than the number of cylindrical rings in the proximal section.

52. The stent of claim 50, wherein at least a portion of the distal section rings and/or the proximal section rings are coated with a therapeutic drug to inhibit cell growth.

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